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Please find below and/or attached an Office communication concerning this application or proceeding.

		Application	No.	Applicant(a)				
		Application	NO.	Applicant(s)	M			
Office Action Summary		09/512,107		KUMAGAI ET AL.	Musa			
		Examiner		Art Unit				
		Thoi V. Duor		2871				
The MAILING DA	TE of this communication a	appears on the c	over sheet with the	correspondence addre	ss			
A SHORTENED STATUTHE MAILING DATE O - Extensions of time may be avarafter SIX (6) MONTHS from the - If the period for reply specified - If NO period for reply is specified - Failure to reply within the set o	JTORY PERIOD FOR REF F THIS COMMUNICATION ilable under the provisions of 37 CFR e mailing date of this communication. above is less than thirty (30) days, a r ed above, the maximum statutory perior r extended period for reply will, by stat e later than three months after the ma See 37 CFR 1.704(b).	N. 1.136(a). In no event, reply within the statutor od will apply and will e tute, cause the applica	however, may a reply be ti ry minimum of thirty (30) da xpire SIX (6) MONTHS fron tion to become ABANDONE	mely filed ys will be considered timely. n the mailing date of this comm ED (35 U.S.C. § 133).	unication.			
Status								
1)⊠ Responsive to co	mmunication(s) filed on 16	February 2005						
2a)⊠ This action is FIN	<u> </u>							
	Since this application is in condition for allowance except for formal matters, prosecution as to the ments is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.							
Disposition of Claims								
4a) Of the above of 5)⊠ Claim(s) <u>3,5,6 and</u> 6)⊠ Claim(s) <u>2,4,16,1</u> 7)□ Claim(s) is	7 and 19 is/are rejected.	rawn from cons						
Application Papers								
9) The specification i	s objected to by the Exami	iner.						
10) ☐ The drawing(s) file	ed on is/are: a)□ a	ccepted or b)	objected to by the	Examiner.				
	equest that any objection to the		=					
_	ng sheet(s) including the correction is objected to by the	•		•	• •			
Priority under 35 U.S.C. §	119							
12) Acknowledgment is a) All b) Some 1. Certified co 2. Certified co 3. Copies of the application	is made of a claim for foreign to the priority docume opies of the priority docume opies of the priority docume the certified copies of the priority docume from the International Bure etailed Office action for a li	ents have been i ents have been i riority document eau (PCT Rule 1	received. received in Applicat s have been receiv 17.2(a)).	ion No ed in this National Sta	ge			
Attachment(s) 1) Notice of References Cited 2) Notice of Draftsperson's Pal 3) Information Disclosure State Paper No(s)/Mail Date	tent Drawing Review (PTO-948) ement(s) (PTO-1449 or PTO/SB/0		Interview Summary Paper No(s)/Mail D Notice of Informal F		2)			

DETAILED ACTION

This office action is in response to the Amendment filed February 16, 2005.
 Accordingly, claim 19 was amended, and claims 1 and 7-15 were cancelled.
 Currently, claims 2-6 and 16-19 are pending in this application.

Claim Rejections - 35 USC § 103

- 2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawayama et al. (USPN 6,184,960 B1) in view of Shimada et al. (US 6,052,162) and Kiryu et al. (US 5,368, 962).

As shown from Figs. 23 and 24, Sawayama discloses a method for manufacturing a reflective type liquid crystal display wherein two transparent insulating substrates, in which an electrode is formed on at least one of them, are arranged to be opposite and adhered to each other and a liquid crystal material is held between said two transparent insulating substrates (see also Fig. 22), the method including the steps of:

forming scanning lines 202, a scanning electrode 203, and common electrode wiring 204 (capacitance line) on a transparent insulating substrate 201 (col. 22, lines 20-28);

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forming an insulating film 205 on said scanning lines, said scanning electrode and said common electrode wiring;

forming a semiconductor layer 206 on said scanning electrode through said insulating film;

forming a first electrode 209 and a second electrode 209' forming a semiconductor element 210 with said semiconductor layer 206, and forming signal lines 209;

applying photosensitive positive-type resin 222 on said first electrode, said second electrode, and said signal lines and exposing said photosensitive resin (see Figs. 26B and 26C, and col. 23, lines 6-8);

forming an interlayer insulating film 211 having a contact hole 212 at a predetermined position and desired unevenness on the surface by applying a development (see also Figs. 26B-26D and col. 23, lines 6-9); and

forming a reflex picture element electrode 213 having a configuration of the transferred unevenness on the surface of said interlayer insulating film and electrically connected to said second electrode 209' through said contact hole 212 by forming a high reflex metal film (AI) on said interlayer insulating film and in said contact hole, and conducting pattern (see Fig. 26G, col. 22, lines 61-64 and col. 23, lines 11-15),

wherein the exposure for forming desired unevenness on an interlayer insulating film 29 is conducted only from a front side (see Figs. 7C-7G).

Sawayama discloses a reflection type liquid crystal display that is basically the same as that recited in claim 16 except for forming an interlayer insulating film

composed of a photosensitive positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength; and sticking an ultraviolet-cut film on a face of the transparent insulating film opposite to the face where said photosensitive positive-type resin is applied.

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As shown in Fig. 2, Shimada discloses a liquid crystal display comprising an interlayer insulating film 38 composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength so as to increase the brightness of the display (col. 5, lines 38-42 and col. 9, lines 29-48).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reflection type liquid crystal display of Sawayama with the teaching of Shimada by forming an interlayer insulating film composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength so as to improve the display brightness (col. 5, lines 38-42 and col. 9, lines 29-48).

Further, Kiryu discloses a masking film comprising a peelable, transparent ultraviolet-cut film provided on a transparent substrate for cutting ultraviolet rays having a wavelength of 450 nm or less (col. 2, lines 33-40).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Sawayama et al. with the teaching of Kiryu by sticking an ultraviolet-cut film on a face of the transparent insulating substrate opposite to the face where said photosensitive positive-type resin is applied for cutting ultraviolet rays having a wavelength of 450 nm or less to improve the display

workability during exposure to actinic light in the photomechanical reproduction process (col. 1, lines 10-16 and 38-41).

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawayama et al. (USPN 6,184,960 B1) in view of Shimada et al. (US 6,052,162).

As shown from Figs. 23 and 24, Sawayama et al. discloses a method for manufacturing a reflective type liquid crystal display wherein two transparent insulating substrates, in which an electrode is formed on at least one of them, are arranged to be opposite and adhered to each other and a liquid crystal material is held between said two transparent insulating substrates (see also Fig. 22), the method including the steps of:

forming scanning lines 202, a scanning electrode 33, and common electrode wiring 204 (capacitance line) on a transparent insulating substrate 201 (col. 22, lines 20-28);

forming an insulating film 205 on said scanning lines, said scanning electrode and said common electrode wiring;

forming a semiconductor layer 206 on said scanning electrode through said insulating film;

forming a first electrode 209 and a second electrode 209' forming a semiconductor element 210 with said semiconductor layer 206, and forming signal lines 209;

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forming an interlayer insulating film 211 having a contact hole 212 at a predetermined position and desired unevenness on the surface by applying a development (see Figs. 26B-26D and col. 23, lines 6-9); and

forming a reflex picture element electrode 213 having a configuration of the transferred unevenness on the surface of said interlayer insulating film and electrically connected to said second electrode 209' through said contact hole 212 by forming a high reflex metal film (Al) on said interlayer insulating film and in said contact hole, and conducting pattern (see Fig. 26G, col. 22, lines 61-64 and col. 23, lines 11-15).

As shown in Figs. 6A, 6B and 7A-7I, Sawayama et al. discloses the method of forming the interlayer insulating film in detail comprising:

forming an interlayer insulating film 24 at a predetermined position and desired unevenness on the surface by conducting exposure to UV light using a mask A(25) and development (Figs 7C and 7D) and forming another interlayer insulating film 28 having desired unevenness on the surface of the interlayer insulating film 24 (another predetermined position) by conducting exposure at a different exposure amount using another mask B(27) and development (Figs. 7F, 7G and 7H) (col. 15, lines 31-43),

wherein the exposure for forming unevenesss on the interlayer insulation film is conducted only from a front side.

Sawayama et al. discloses a reflective type liquid crystal display that is basically the same as that recited in claim 16 except for forming an interlayer insulating film composed of a photosensitive positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength.

As shown in Fig. 2, Shimada et al. discloses a liquid crystal display comprising an interlayer insulating film 38 composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength so as to increase the brightness of the display (col. 5, lines 38-42 and col. 9, lines 29-48).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reflection type liquid crystal display of Sawayama et al. with the teaching of Shimada et al. by forming an interlayer insulating film composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength so as to improve the display brightness (col. 5, lines 38-42 and col. 9, lines 29-48).

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawayama et al. (USPN 6,184,960 B1) in view of Shimada et al. (US 6,052,162) and Takatsu et al. (USPN 5,434,026).

As shown from Figs. 5A and 5B, Sawayama et al. discloses a method for manufacturing a reflective type liquid crystal display, comprising:

forming plural scanning lines 10 and plural signal lines 11 crossing said scanning lines on an insulating substrate; and

forming a switching element 17 in each of picture element regions divided by said scanning lines and said signal lines.

As shown in Figs. 7A-7I, the method of Sawayama et al. further includes the step of forming an interlayer insulating film 29 having appropriate unevenness of an inseparable pattern in the picture element region and having a

contact hole 42 of a separable pattern on a drain electrode 19 of said switching element by plainly applying a photosensitive insulating resin on said substrate so as to dissolve difference in level caused by said scanning lines, said signal lines, and said switching element, and conducting exposure and development while changing an amount of exposure (col. 15, lines 32-44); and

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the step of forming a reflex picture element electrode 4 having unevenness due to said interlayer insulating film at a position conforming to each of the picture element regions and which is electrically connected to said switching element through said contact hole, by patterning after forming a high reflex film on said interlayer insulating film (Fig. 7I),

wherein in the process of forming the interlayer insulating film, the insulating resin is exposed by divisional (split) exposure in which the inseparable pattern and the separable pattern are exposed by different masks as shown in Figs. 6A, 6B, 7C and 7G; and

wherein the exposure for forming unevenness on the interlayer insulation film is conducted only from a front side.

Sawayama et al. discloses a method for manufacturing a reflective type liquidcrystal display that is basically the same as that recited in claims 2 and 4 except for an interlayer insulating film composed of a positive-type resin having a sensitivity to an iline of 365 nm in wavelength and an h-line of 405 nm in wavelength; and the exposure value of the separable pattern and the inseparable pattern. As shown in Fig. 2, Shimada et al. discloses a liquid crystal display comprising an interlayer insulating film 38 composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength so as to increase the brightness of the display (col. 5, lines 38-42 and col. 9, lines 29-48).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reflection type liquid crystal display of Sawayama et al. with the teaching of Shimada et al. by forming an interlayer insulating film 38 composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength to improve the display brightness (col. 5, lines 38-42 and col. 9, lines 29-48).

Further, Takatsu et al. discloses a quick and accurate method of determining exposure conditions for an exposure device such as a stepper for manufacturing a liquid crystal display device (col. 1, lines 12-19). As shown in Fig. 1C, a photoresist layer at position b1 is exposed to light intensity of 20 and a photoresist layer at position a1 is exposed to light intensity of 75 so as to obtain an accurate film reduction (col. 3, lines 24-27 and col. 4, lines 27-31). Accordingly, the photoresist layer at position b1 is exposed by a predetermined exposure amount of 27 % of the exposure amount for the photoresist layer at position a1.

Thus, it would have been obvious that the method of Takatsu et al. is applicable for predetermining exposure conditions for the separable pattern and the inseparable pattern so as to obtain a desired insulating resin having appropriate unevenness of the

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inseparable pattern in the picture element region and having a contact hole of the separable pattern (col. 3, lines 24-27 and col. 4, lines 27-31).

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda et al. (US 6,262,783 B1) in view of Shimada et al. (US 6,052,162), Mei et al. (USPN 6,140,668), and Asano et al. (USPN 6,190,777).

As shown in Figs. 1 and 2, Tsuda discloses a reflection type liquid crystal display comprising:

a first substrate having:

a transparent insulating plate 201;

scanning lines 204, a scanning electrode 203, and common electrode 205 wiring formed on said insulating plate;

an insulating film 207 formed on said scanning lines, said scanning electrode and said common electrode wiring;

a semiconductor layer 208 (see also Fig. 3C) formed on said scanning electrode through said insulating film;

a first electrode 212 and a second electrode 213 forming a semiconductor element with said semiconductor layer, and signal lines 211 connected to said first electrode;

an interlayer photosensitive insulating film 240 which is formed on said first electrode, said second electrode and said signal lines, absorbs difference in level of said scanning lines, said first electrode, said second electrode and said signal lines, and

possesses minute unevenness on the surface (col. 9, lines 12-25) serving as an inseparable pattern on the surface (Fig. 2);

a reflex picture element electrode 423 composed of a high reflex metal film Al (col. 9, lines 47-50) having a configuration transferred to said interlayer insulating film as the unevenness on the surface of said interlayer insulating film and electrically connected to said second electrode through a contact hole provided in said interlayer insulating film (Fig. 5B) and serving as a separable pattern; and

a second transparent substrate 301 sandwiching and holding a liquid crystal material 250 with said first substrate (col. 1. lines 52-54),

wherein each pixel region, which corresponds to each island-shaped light-shielding area 260, excludes the region where said scanning lines, said signal lines are formed and said contact holes as shown in Fig. 8 (col. 10, lines 48-65 and col. 11, lines 20-25).

Tsuda discloses a reflection type liquid crystal display that is basically the same as that recited in claim 19 except for an interlayer insulating film composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength; a semiconductor film composed of the same film as said semiconductor layer and formed in a picture element region excluding the region where said scanning lines, said signal lines and said contact holes are formed; and the transparent insulating plate processed so that the entire surface does not permit any ultraviolet light to transmit therethrough.

At first, as shown in Fig. 2, Shimada discloses a liquid crystal display comprising an interlayer insulating film 38 composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength so as to increase the brightness of the display (col. 5, lines 38-42 and col. 9, lines 29-48).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reflection type liquid crystal display of Tsuda with the teaching of Shimada by forming an interlayer insulating film 38 composed of a positive-type resin having a sensitivity to an i-line of 365 nm in wavelength and an h-line of 405 nm in wavelength to improve the display brightness.

Further, as shown in Figs. 7 and 10, Mei discloses a liquid crystal display comprising an a-Si semiconductor layer 64 (as 52 in Fig. 4; col. 4, lines 39-41) and an a-Si semiconductor film 68 which is provided to improve absorption of the UV radiation during lithography process for forming a channel region of the display (col. 2, lines 30-36 and col. 6, lines 45-55).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the liquid crystal display of Tsuda with the teaching of Mei by forming a semiconductor film composed of the same material as said semiconductor layer in a picture element region excluding the region where said scanning lines, said signal lines and said contact holes are formed to improve absorption of the UV radiation during lithography process.

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Furthermore, Asano discloses an ultraviolet absorbing plate which is capable of shielding completely transmitting lights in an ultraviolet region, wherein the UV absorbing plate is substantially transparent (col. 11, lines 38-57).

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Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the liquid crystal display of Tsuda et al. with the teaching of Asano by employing an UV absorbing plate so as to obtain an extremely superior resistance to deterioration by UV rays and hence, to prolong the life of the display (col. 15, lines 30-38).

As to the product-by-process limitations "said inseparable pattern and separable pattern are arranged respectively in different masks and exposed separately; and said inseparable pattern is exposed with a predetermined exposure amount of 20 to 80% of the exposure amount for said separable pattern", it has been recognized that "Even through product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process". *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985). See also MPEP 2113.

Response to Arguments

7. Applicant's arguments filed February 16, 2005 have been fully considered but they are not persuasive.

Re claims 2 and 4, Applicant argued that Takatsu refers only to different positions of a single mask during a single exposure while the claimed invention is directed to two masks and two different exposures. The Examiner disagrees with Applicant's remarks since Sawayama already discloses the claimed invention where two different masks with two different exposures are used, one exposure is for the inseparable pattern and the other exposure is for the separable pattern. However, since Sawayama does not disclose the exposure amount for each pattern, the reference of Takatsu is employed for teaching determining proper amount of exposure to light intensity to obtain desired patterns. Accordingly, it would have been obvious that the method of Takatsu is applicable for predetermining exposure conditions for the separable and inseparable patterns of Sawayama so as to obtain an appropriate unevenness of the inseparable pattern and a contact hole of the separable pattern.

Re claim 16, In response to applicant's argument that Kiryu is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Kiryu discloses a masking film comprising a peelable, transparent ultraviolet-cut film provided on a transparent substrate for cutting UV rays having a wavelength of 450 nm or less (col. 2, lines 33-40). Thus, it is obvious that this masking film of Kiryu is applicable to a liquid crystal display for cutting UV rays coming into the display. Applicant also argued that Kiryu is silent as to the specific limitations regarding

the placement of the ultraviolet-cut film. The Examiner disagrees, since the masking film or the ultraviolet-cut film of Kiryu is applicable to the liquid crystal display for cutting UV rays, it is obvious that the masking film is to be placed according to a specific application where UV rays are wanted to be cut. In this case, as shown in Figs. 7A-7I, it is obvious that the method of Sawayama could be modified by sticking the ultraviolet-cut film of Kiryu on a face of the transparent insulating substrate 1 opposite to the face where a photosensitive layer 29(24, 28) is applied to reduce the UV radiation or light reflected back toward the photosensitive layer 29 during the exposure, thereby reducing the potential for non-uniformities of the photosensitive layer 29 and improving the display workability during exposure.

Re claim 17, Applicant argued that Sawayama fails to disclose that another interlayer insulating film is formed at another predetermined position. The Examiner disagrees since Figs. 7E and 7F of Sawayama clearly show that an insulating film 24 and another insulating film 28 are formed by two different steps and the other insulating film 28 is formed on top of the insulating film 24. Thus, both asserted interlayer insulating films are not formed in the same location.

Re claim 19, Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection as shown above.

Allowable Subject Matter

8. Claims 3, 5, 6 and 18 are allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically,

Re claims 3 and 5, none of the prior art of record discloses, in combination with other limitations as claimed, a mask for manufacturing a reflection type liquid crystal display comprising a base material and a shading material of at least two layers provided on said base material, said at least two layers including an ultraviolet filter for cutting ultraviolet rays at a predetermined value of 20 to 80 %.

The most relevant references, USPN 5,368,962 of Kiryu et al. and USPN 5,994,157 of Aggas et al., fail to disclose or suggest an ultraviolet filter for cutting ultraviolet rays at a predetermined value of 20 to 80 %. The reference of Kiryu et al. discloses a mask having a shading material comprised of at least two layers which include an ultraviolet filter layer; however, the UV rays are to be cut at a value of more than 99% ((col. 3, lines 34-45). Meanwhile, the reference of Aggas et al. discloses only an UV blocking layer formed of a-Si and having a thickness of from about 200 to 2000 Angstrom for cutting ultraviolet rays at about 80% (col. 7, lines 7-31).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong

(Into

05/04/2005

NG T. NGUYEN

HARY EXAMINER